



# SPEC<sup>®</sup> CFP2006 Result

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## Hewlett-Packard Company

SPECfp<sup>®</sup>\_rate2006 = 48.4

HP Integrity rx3600 (1.6GHz/18MB Dual-Core Intel Itanium 2)

SPECfp\_rate\_base2006 = 46.7

CPU2006 license: 03

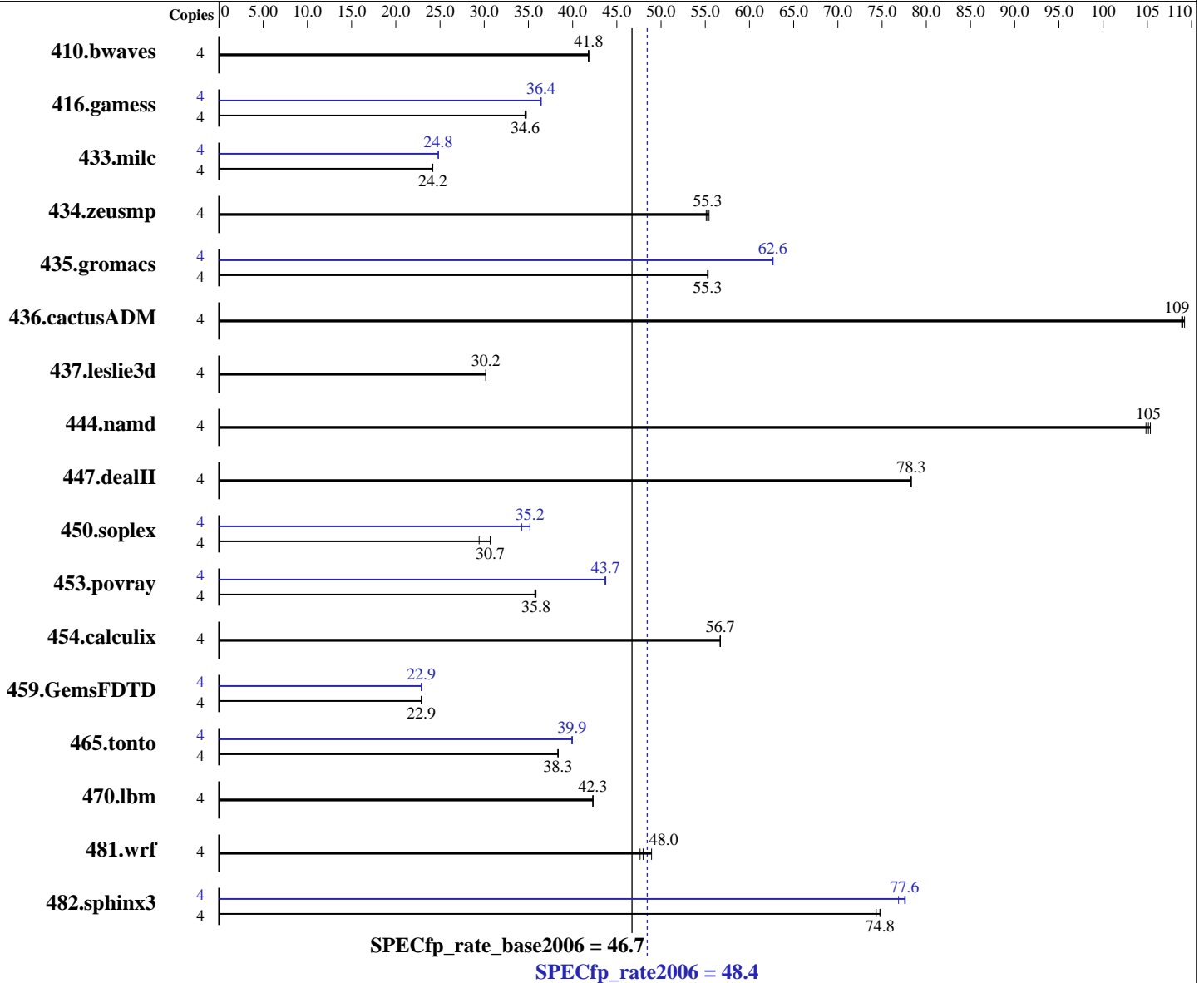
Test date: Sep-2006

Test sponsor: Hewlett-Packard Company

Hardware Availability: Nov-2006

Tested by: Hewlett-Packard Company

Software Availability: Sep-2006



### Hardware

CPU Name: Dual-Core Intel Itanium 2 9040  
 CPU Characteristics: 1.6GHz/18MB, 533MHz FSB  
 CPU MHz: 1600  
 FPU: Integrated  
 CPU(s) enabled: 4 cores, 2 chips, 2 cores/chip  
 CPU(s) orderable: 1-2 chips  
 Primary Cache: 16 KB I + 16 KB D on chip per core  
 Secondary Cache: 1 MB I + 256 KB D on chip per core

### Software

Operating System: HPUX11i-TCOE B.11.23.0609  
 Compiler: HP C/aC++ Developer's Bundle C.11.23.12  
 HP Fortran90 Compiler B.11.23.32  
 Auto Parallel: No  
 File System: vxfs  
 System State: Multi-user  
 Base Pointers: 32-bit  
 Peak Pointers: 32-bit  
 Other Software: None

Continued on next page



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L3 Cache: 9 MB I+D on chip per core  
Other Cache: None  
Memory: 16 GB (8x2GB DIMMs, AD124A 8-DIMM memory carrier)  
Disk Subsystem: 73GB 10K RPM SAS  
Other Hardware: None

## Results Table

Benchmark	Base							Peak						
	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio	Copies	Seconds	Ratio	Seconds	Ratio	Seconds	Ratio
410.bwaves	4	1300	41.8	<b>1300</b>	<b>41.8</b>	1301	41.8	4	1300	41.8	<b>1300</b>	<b>41.8</b>	1301	41.8
416.gamess	4	2254	34.8	2263	34.6	<b>2262</b>	<b>34.6</b>	4	<b>2150</b>	<b>36.4</b>	2149	36.4	2153	36.4
433.milc	4	<b>1518</b>	<b>24.2</b>	1520	24.2	1518	24.2	4	<b>1481</b>	<b>24.8</b>	1481	24.8	1480	24.8
434.zeusmp	4	657	55.4	<b>659</b>	<b>55.3</b>	661	55.1	4	657	55.4	<b>659</b>	<b>55.3</b>	661	55.1
435.gromacs	4	<b>517</b>	<b>55.3</b>	517	55.3	516	55.3	4	456	62.6	<b>456</b>	<b>62.6</b>	456	62.7
436.cactusADM	4	<b>438</b>	<b>109</b>	439	109	438	109	4	<b>438</b>	<b>109</b>	439	109	438	109
437.leslie3d	4	<b>1246</b>	<b>30.2</b>	1246	30.2	1245	30.2	4	<b>1246</b>	<b>30.2</b>	1246	30.2	1245	30.2
444.namd	4	306	105	<b>305</b>	<b>105</b>	305	105	4	306	105	<b>305</b>	<b>105</b>	305	105
447.dealII	4	584	78.3	<b>584</b>	<b>78.3</b>	585	78.3	4	584	78.3	<b>584</b>	<b>78.3</b>	585	78.3
450.soplex	4	1134	29.4	<b>1087</b>	<b>30.7</b>	1087	30.7	4	974	34.3	<b>948</b>	<b>35.2</b>	948	35.2
453.povray	4	596	35.7	<b>594</b>	<b>35.8</b>	594	35.9	4	488	43.6	486	43.7	<b>487</b>	<b>43.7</b>
454.calculix	4	582	56.7	582	56.7	<b>582</b>	<b>56.7</b>	4	582	56.7	582	56.7	<b>582</b>	<b>56.7</b>
459.GemsFDTD	4	1856	22.9	1855	22.9	<b>1855</b>	<b>22.9</b>	4	1855	22.9	<b>1855</b>	<b>22.9</b>	1854	22.9
465.tonto	4	1027	38.3	1026	38.4	<b>1026</b>	<b>38.3</b>	4	985	40.0	986	39.9	<b>985</b>	<b>39.9</b>
470.lbm	4	1300	42.3	<b>1300</b>	<b>42.3</b>	1299	42.3	4	1300	42.3	<b>1300</b>	<b>42.3</b>	1299	42.3
481.wrf	4	<b>931</b>	<b>48.0</b>	938	47.6	913	48.9	4	<b>931</b>	<b>48.0</b>	938	47.6	913	48.9
482.sphinx3	4	1049	74.3	1042	74.8	<b>1043</b>	<b>74.8</b>	4	1014	76.9	1004	77.6	<b>1005</b>	<b>77.6</b>

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

## Operating System Notes

The system had the September 2006 HP-UX 11i v2 Technical Computing Operating Environment (TCOE) and compilers installed, along with the following patches:

```

PHSS_34858 linker + fdp cumulative patch
PHSS_34853 Math Library Cumulative Patch
PHSS_34854 Integrity Unwind Library
PHSS_34855 HP C Compiler (A.06.12)
PHSS_34856 aC++ Compiler (A.06.12)
PHSS_34857 u2comp/be/plugin library patch
PHSS_34395 FORTRAN I/O Library [libIO77]
PHSS_34397 FORTRAN Intrinsics [libF90 B.11.23.17]
PHSS_34399 Fortran Product Patch, v3.1 to v3.1.1
PHKL_34020 Perfmon enhancements and Itanium Dual-Core

```

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## Operating System Notes (Continued)

The following kernel tunables were set, in addition to the defaults set by the Technical Computing OE:

```
dbc_max_pct=20
dbc_min_pct=20
maxdsiz=3221225472
maxssiz=401604608
```

## Base Compiler Invocation

C benchmarks:

```
/opt/ansic/bin/cc -Ae
```

C++ benchmarks:

```
/opt/aCC/bin/aCC -Aa
```

Fortran benchmarks:

```
/opt/fortran90/bin/f90
```

Benchmarks using both Fortran and C:

```
/opt/ansic/bin/cc -Ae /opt/fortran90/bin/f90
```

## Base Portability Flags

```
453.povray: -DSPEC_CPU_NEED_INVHYP
454.calculix: -DSPEC_CPU_NOZMODIFIER
481.wrf: -DNOUNDERSCORE +noppu
```

## Base Optimization Flags

C benchmarks:

```
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N
```

C++ benchmarks:

```
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N
```

Fortran benchmarks:

```
+Ofaster -Wl,-a,archive_shared -Wl,+pd,64M -Wl,+pi,64M -Wl,-N
```

Benchmarks using both Fortran and C:

```
+Ofaster +Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M
-Wl,+pi,64M -Wl,-N
```



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## Peak Compiler Invocation

C benchmarks:

`/opt/ansic/bin/cc -Ae`

C++ benchmarks:

`/opt/aCC/bin/aCC -Aa`

Fortran benchmarks:

`/opt/fortran90/bin/f90`

Benchmarks using both Fortran and C:

`/opt/ansic/bin/cc -Ae /opt/fortran90/bin/f90`

## Peak Portability Flags

453.povray: `-DSPEC_CPU_NEED_INVHYP`

454.calculix: `-DSPEC_CPU_NOZMODIFIER`

481.wrf: `-DNOUNDERSCORE +noppu`

## Peak Optimization Flags

C benchmarks:

433.milc: `+Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M  
-Wl,+pi,64M +Onoparmsoverlap -Wl,-N`

470.lbm: `basepeak = yes`

482.sphinx3: `+Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M  
-Wl,+pi,64M +Onoparmsoverlap`

C++ benchmarks:

444.namd: `basepeak = yes`

447.dealIII: `basepeak = yes`

450.soplex: `+Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M  
-Wl,+pi,64M +Onoparmsoverlap -Wl,-N`

453.povray: `+Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype_safety=ansi -Wl,-a,archive_shared -Wl,+pd,64M  
-Wl,+pi,64M`

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## Peak Optimization Flags (Continued)

Fortran benchmarks:

410.bwaves: basepeak = yes

416.gamess: +Ofaster -Wl, -a, archive\_shared -Wl, +pd, 64M -Wl, +pi, 64M  
+Odataprefetch=direct -Wl, -N

434.zeusmp: basepeak = yes

437.leslie3d: basepeak = yes

459.GemsFDTD: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
-Wl, -a, archive\_shared -Wl, +pd, 64M -Wl, +pi, 64M  
+Odataprefetch=direct -Wl, -N

465.tonto: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
-Wl, -a, archive\_shared -Wl, +pd, 64M -Wl, +pi, 64M  
+Odataprefetch=direct

Benchmarks using both Fortran and C:

435.gromacs: +Oprofile=collect:all(pass 1) +Oprofile=use(pass 2) +Ofaster  
+Otype\_safety=ansi -Wl, -a, archive\_shared -Wl, +pd, 64M  
-Wl, +pi, 64M +Onoparmsoverlap

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090715.08.html](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.08.html)

You can also download the XML flags source by saving the following link:

[http://www.spec.org/cpu2006/flags/CPU2006\\_flags.20090715.08.xml](http://www.spec.org/cpu2006/flags/CPU2006_flags.20090715.08.xml)

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Tested with SPEC CPU2006 v1.0.  
Report generated on Tue Jul 22 10:05:28 2014 by SPEC CPU2006 PS/PDF formatter v6932.  
Originally published on 17 October 2006.